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S. Krishnan  
Ericsson  
S. Gundavelli  
Cisco Systems  
M. Liebsch  
NEC  
H. Yokota  
KDDI  
J. Korhonen  
Nokia Siemens Networks  
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**Update Notifications for Proxy Mobile IPv6  
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**Abstract**

Proxy Mobile IPv6 (PMIPv6) is a network based mobility management protocol that enables IP mobility for a host without requiring its participation in any mobility-related signaling. This document proposes a mechanism for the Local Mobility Anchor to asynchronously notify the Mobile Access Gateway about changes related to the mobility session.

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## 1. Introduction

Proxy Mobile IPv6 [RFC5213] describes the protocol operations to maintain reachability and session persistence for a Mobile Node (MN) without the explicit participation from the MN in signaling operations at the Internet Protocol (IP) layer. In order to facilitate such network-based mobility, the PMIPv6 protocol defines a Mobile Access Gateway (MAG), which acts as a proxy for the Mobile IPv6 [RFC6275] signaling, and the Local Mobility Anchor (LMA) which acts similar to a Home Agent. The setup of the mobility session is initiated by the MAG by sending a PBU message and confirmed by the LMA in the PBA message. Once the mobility session is set up for a given lifetime, the LMA has no mechanism to inform the MAG about changes to the mobility session or any parameters related to the mobility session. One such scenario where such a mechanism is needed is when the LMA wants to inform the MAG that it needs to reregister. This document defines a new mobility header message for doing so and a corresponding mobility header message for the MAG to acknowledge the notification.

## 2. LMA Behavior

The LMA sends the Update Notification message in response to a condition that is specified in the Notification Reason field. If the LMA requires an acknowledgement from the MAG concerning the UPN message, it MUST set the A bit to 1. If not it MUST set the A bit to 0. The LMA MAY retransmit the UPN messages if reliability is required for the specific Notification reason. If the UPN message is retransmitted, the LMA MUST reuse the same sequence number as the original message. If the LMA receives an UPA message with a failure Status (Status value >127) it SHOULD log an error.

## 3. MAG Behavior

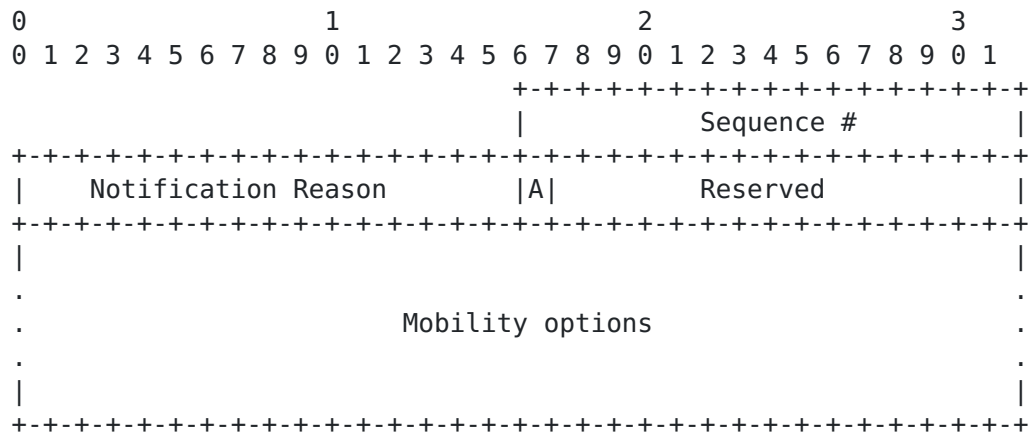
If a received Update Notification message has the A bit set to 1, the MAG MUST create and transmit an Update Notification Acknowledgement message in response to the UPN message. The sequence number of the UPA message MUST be copied from the UPN message that is being responded to. Depending on whether the message was processed successfully or not, the MAG MUST set the Status value in the UPA message to an appropriate value. The actual processing required on the MAG is out of the scope of this document and will be specified for each Notification reason.



## 4. Message Formats

### 4.1. Update Notification(UPN)

The LMA sends an UPN message to a MAG to notify the MAG that some information regarding the mobility session or parameters related to the mobility session has changed.



Sequence Number: A monotonically increasing integer. Set by the LMA and retained for retransmissions.

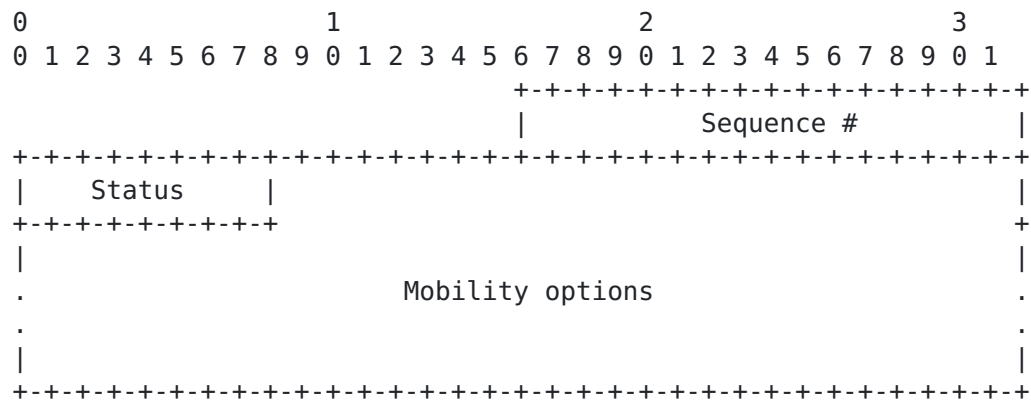
Acknowledgement Requested (A): If this bit is set, the MAG MUST send an UPA message in response to the received UPN message.

Notification Reason: Contains the code corresponding to the reason that caused the LMA to send the Update Notification to the MAG. This field does not contain any structure and MUST be treated as an enumeration.

Mobility Options: Contains a set of mobility options for the MAG to act upon. The set of mobility options that can be present in the message is related to the Notification Reason field in the message.

### 4.2. Update Notification Acknowledgement(UPA)

The MAG sends an UPA message to a LMA in order to acknowledge that it has received an UPN message with the A bit set.



Sequence Number: Copied from the UPN message being acknowledged.

Status: Specifies the result of the MAG's processing of the UPN message. The status codes between 0 and 127 signify successful processing of the UPN message and codes between 128 and 255 signify that an error occurred during processing of the UPN message.

Mobility Options: Contains a set of mobility options used to provide context to the LMA. The set of mobility options that can be present in the message is related to the Status field in the message.

## 5. Security Considerations

The protocol specified in this document uses the same security association as defined in [RFC5213] for use between the LMA and the MAG to protect the UPN messages. Support for integrity protection using IPsec is REQUIRED, but support for confidentiality is NOT REQUIRED.

## 6. IANA Considerations

The Update Notification message require a single Mobility Header Type (TBA1) from the Mobility Header Types registry at <http://www.iana.org/assignments/mobility-parameters>

The Update Notification Acknowledgement message require a single Mobility Header Type (TBA2) from the Mobility Header Types registry at <http://www.iana.org/assignments/mobility-parameters>

This document creates a new registry for Notification Reasons. The



allocation policy for this field is First Come, First Served.

This document creates a new registry for Status codes in the UPA message. The allocation policy for this field is First Come, First Served.

## **7. References**

### **7.1. Normative References**

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC5213] Gundavelli, S., Leung, K., Devarapalli, V., Chowdhury, K., and B. Patil, "Proxy Mobile IPv6", [RFC 5213](#), August 2008.

### **7.2. Informative References**

- [RFC6275] Perkins, C., Johnson, D., and J. Arkko, "Mobility Support in IPv6", [RFC 6275](#), July 2011.

#### Authors' Addresses

Suresh Krishnan  
Ericsson  
8400 Blvd Decarie  
Town of Mount Royal, Quebec  
Canada

Phone: +1 514 345 7900 x42871  
Email: suresh.krishnan@ericsson.com

Sree Gundavelli  
Cisco Systems

Email: sgundave@cisco.com

Marco Liebsch  
NEC

Email: marco.liebsch@nw.neclab.eu



Hidetoshi Yokota  
KDDI

Email: yokota@kddilabs.jp

Jouni Korhonen  
Nokia Siemens Networks  
Linnoitustie 6  
FI-02600 Espoo  
Finland

Email: jouni.nospam@gmail.com